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This white paper was released in September of 2013. Since then, In-Stride evaluations have evolved to incorporate means other than wargames in their method of evaluation; wargames do, however, remain one of several tools which can be utilized. This

14. ABSTRACT

This paper provides an overview of an approach to evaluation of draft joint concepts. As part of the joint concept development process, in-stride concept evaluation examines the viability of draft joint concepts prior to final review. The concept evaluation process aims to design an evaluation event that supports a detailed analytic framework based on clear objectives. Analytic war games [are one means to] provide a useful means for achieving adequate rigor at acceptable cost. Preparation and execution of war games must ensure appropriate data is generated for analysis. Concept evaluation culminates with a report of findings and recommendations based on synthesis of the quantitative data and qualitative observations generated. The recommendations enable advancement of concept development through critical examination and refinement of the draft ideas.

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In-Stride Evaluation of Draft Joint Concepts White Paper

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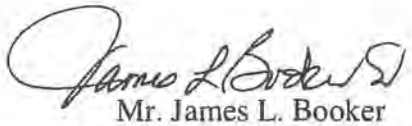
Abstract

This paper provides an overview of the Joint Concepts Division approach to evaluation of draft joint concepts through wargaming. As part of the joint concept development process, in-stride concept evaluation examines the viability of draft joint concepts prior to final review. The concept evaluation process aims to design an evaluation event that supports a detailed analytic framework based on clear objectives. Analytic war games provide a useful means for achieving adequate rigor at acceptable cost. Preparation and execution of war games must ensure appropriate data is generated for analysis. Concept evaluation culminates with a report of findings and recommendations based on synthesis of the quantitative data and qualitative observations generated. The recommendations enable advancement of concept development through critical examination and refinement of the draft ideas.

I have reviewed and endorse the contents of this white paper.



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1. Purpose of this paper. This paper provides an overview of the Joint Concepts Division approach to evaluation[1] of draft joint concepts through wargaming.

2. Introduction. "The Joint Strategic Planning System (JSPS) is the primary means by which the Chairman of the Joint Chiefs of Staff (CJCS) carries out statutory responsibilities assigned in titles 6, 10, 22 and 50 of the United States Code (USC)."[2] Within JSPS, joint concepts provide a strategy-based vision of future joint force operations from which required joint capabilities can be determined, risks can be assessed, and informed decisions can be made. Joint concepts propose new approaches to compelling current or future challenges for which existing approaches and capabilities are insufficient. Joint concept development is the process established in the CJCSI 3010.02 series for the formal generation of joint concepts from initial identification through implementation. A critical step in this process is concept evaluation. Joint concepts are formally evaluated to determine if they will achieve their intended purpose.

3. Concept Evaluation. CJCSI 3010.02 requires evaluation of concepts during the development process after the emerging ideas have matured but prior to the first formal Joint Staff Action Package (JSAP) review. This stage is referred to as "in-stride" concept evaluation. Within the established concept development timeline, in-stride evaluation normally occurs between the 0.3 and 0.5 versions of the draft concept, following a red team review.

In-stride concept evaluation assesses the viability[3] of the draft joint concept, identifies significant deficiencies in the central and supporting ideas, and discovers potential risks and implications for future joint force development. The evaluation leads to refinements that improve the draft concept. Additionally, flaws may be identified which may require significant changes to the concept or even a re-examination of the value of proceeding with further development.

The process of in-stride concept evaluation combines the art of wargaming with analysis to achieve evidence-based findings in the assessment of the concept's viability. This process, depicted in Figure 1, begins with a well-defined purpose and is supported by the following steps: crafting achievable and measurable objectives; building a framework for analysis; designing an event that supports the analytic framework; preparing for and executing the event; and understanding and reporting the results. These steps are sequential, but in practice may overlap while undergoing iterative refinement. The remainder of this paper presents an overview of these concept evaluation steps.

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[1] Evaluate: 1. to determine or fix the value of; 2. to determine the significance, worth, or condition of usually by careful appraisal and study. (Merriam-Webster.com)
[2] CJCSI 3100.01B, Joint Strategic Planning System, 12 December 2008.
[3] Viable: capable of working, functioning, or developing adequately. (Merriam-Webster.com)

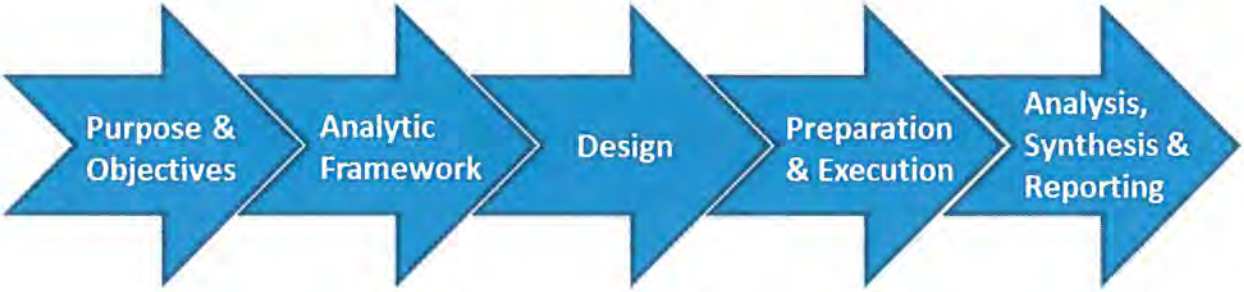

Figure 1. Concept Evaluation Process

3.1 Purpose and Objectives. The purpose of in-stride concept evaluation is to assess the viability of the draft concept. It assesses viability, as opposed to validity[4] or effectiveness,[5] because the conceptual ideas at this stage are not fully developed. The evaluation begins with understanding the concept and establishing achievable and measurable objectives. The objectives address the significant new conceptual ideas. In addition, in-stride concept evaluation identifies and assesses implications, risks, and capabilities within the concept. Ultimately, the evaluation should enable the refinement of the draft concept and improve the quality of future drafts. The key to concept evaluation is that it generates adequate data to address the objectives of the assessment. This begins with a well-crafted analytic framework.

3.2 Analytic Framework. The analytic framework supports achieving the concept evaluation objectives by first breaking down the conceptual ideas into manageable elements for analysis. This decomposition results in the identification of objective-based conceptual issues and corresponding key questions that form the foundation for analysis and data collection. Figure 2 provides an illustration of a notional analytic framework.

Joint concepts typically address operational challenges at a high level. Evaluation requires a mix of qualitative and quantitative methods to analyze the ideas in the concept. In the evaluation event, the concept is applied to a problem set and the data collected provides the evidence required for the assessment. Survey data captures the distribution of participant views on a subject and serves to bound acceptable interpretation of war game results.

Evaluation of some joint concepts may require a level of detail and analytic depth rooted in quantitative methods of research. This may be the case if the concept is evaluated at a more advanced level of maturity or if there is a need to focus on a particular issue, joint function, or capability within a joint concept. Regardless of the requirements for analysis, the analytic framework will need to identify the types of data required to address the objectives. This framework provides the basis for concept evaluation event design.

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[4] Valid: 2 a: well-grounded or justifiable: being at once relevant and meaningful *b*: logically correct 3: appropriate to the end in view ; EFFECTIVE (Merriam-Webster.com)

[5] Effective: 1 *a*: producing a decided, decisive, or desired effect. 2 : ready for service or action (Merriam-Webster.com)

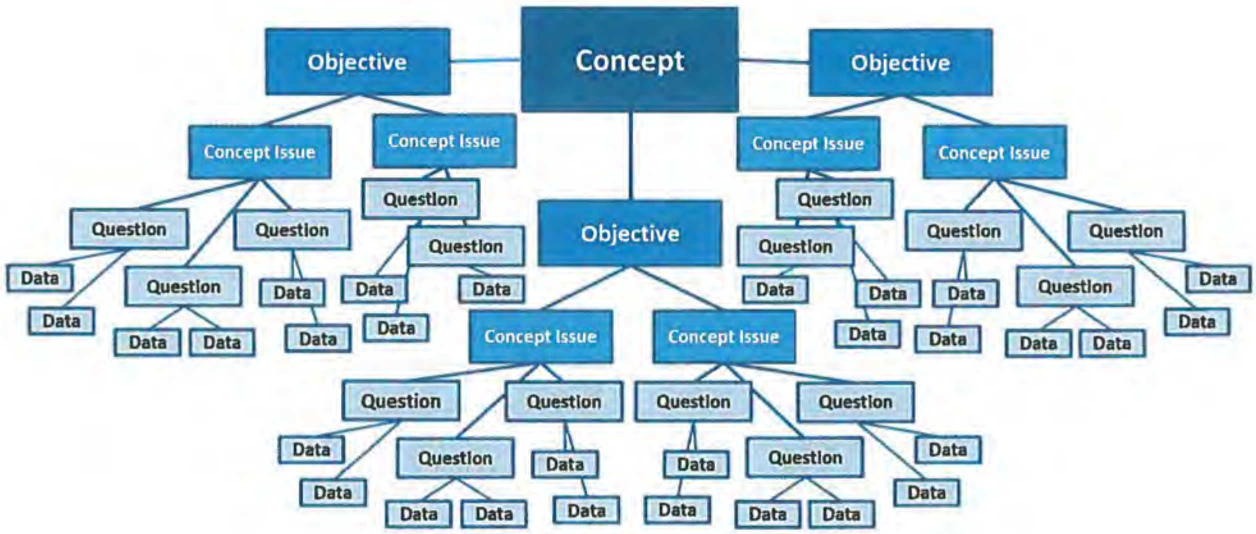

Figure 2. Notional Analytic Framework

3.3 Design. Concept evaluation event design facilitates the critical examination of the conceptual ideas in line with the analytic framework. The goal is designing the most efficient and effective method to achieve this aim while considering the limiting factors of time, funding, facilities, personnel, and technology. There are a number of acceptable ways to combine the art of design with analysis methodologies to evaluate joint concepts within these limitations. This paper addresses analytic war games as a practical means of concept evaluation. Analytic war games provide a useful design format that is well suited for concept evaluation because of their ability to achieve adequate rigor at an acceptable cost.

3.3.1 Analytic War Games. A war game is "a simulated battle or campaign to test military concepts and usually conducted in conferences by officers acting as the opposing staffs."[6] An analytic war game uses a variety of operations research techniques in pursuit of the evaluation objectives. The game design provides the structure and mechanics to generate useful and adequate data to achieve the objectives as conveyed in the analytic framework.

There may be times when concept evaluation requires more focus on a particular principle, joint function, or capability. In this case, the analytic framework may call for greater depth of information that can only be achieved through more detailed baseline comparisons, complex simulations, and quantitative analysis. To a certain degree, analytic war game design can accommodate this additional depth of analysis, but at a higher cost. Analytic war game design is highly adaptable. Simple designs generally produce better results because complex designs are more likely to introduce noise into the analysis process.

3.3.2 War Game Design Requirements. War game design is an art, but there are several basic requirements when designing war games for concept evaluation (Figure 3). The war game must

[6] Merriam-Webster.com

accommodate two basic tests of the concept. The first addresses the question, "Can the conceptual ideas be applied against a likely challenge set?" In this case, a set of experienced participants (blue cell) interprets and applies the conceptual ideas against a problem set that is simulated through the war game environment. This typically manifests in the war game through the development of operational approaches, concepts of operations (CONOPS), or courses of action. This planning activity examines the ability of the concept ideas to be understood and applied to military operations. It also requires the blue cell to identify the capabilities required for the approach and potential risks associated with the approach. The second test addresses the question, "How likely is it that the CONOPS solution will succeed?" This adjudication of the planning activity requires that the blue cell product be compared to a competitive red cell countermove. This process attempts to identify the strengths and weaknesses of the blue cell approach and assesses overall risk and chance of success. These basic tests can be applied to the war game format in many different design variations. The number and type of cells employed, as well as the support structure of technology and personnel should be optimized to provide the most efficient and effective interactions required for analysis.

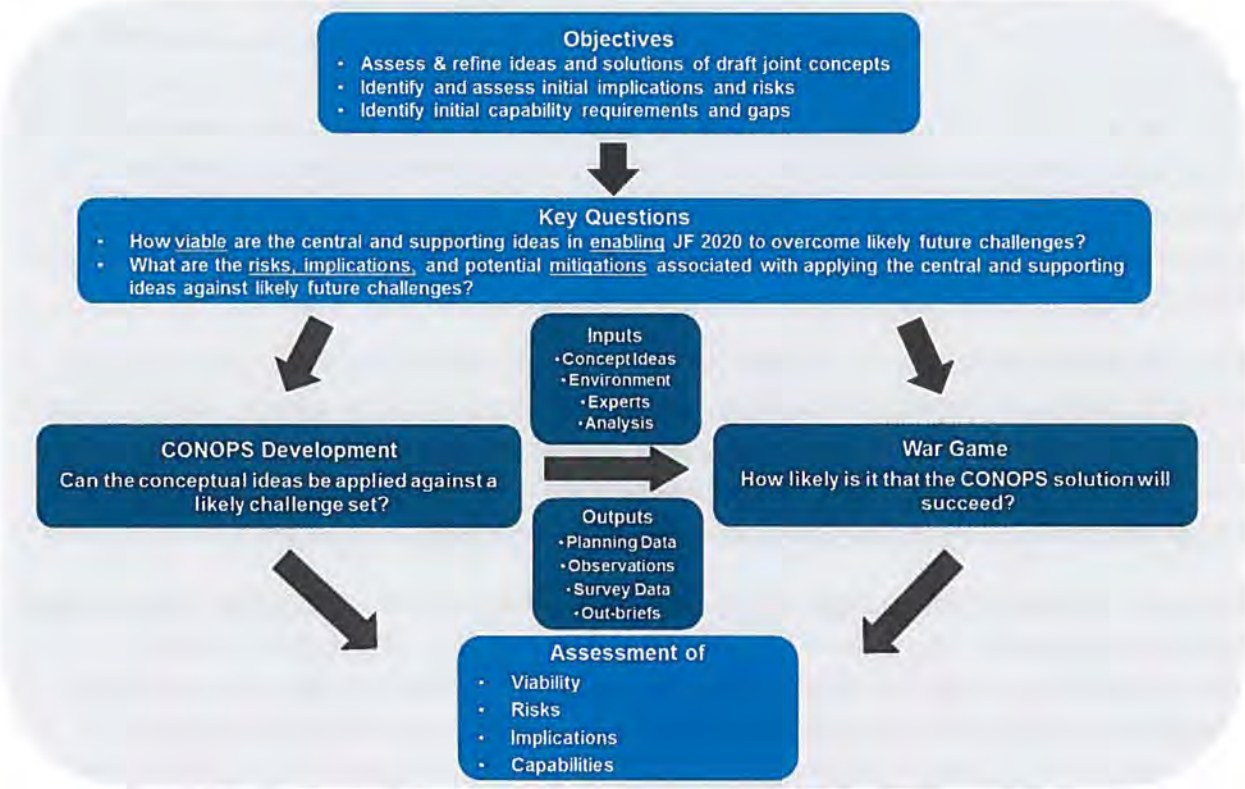

Figure 3. Framework for Concept Evaluation Analysis & Design

4. Preparation and Execution. Evaluation event preparation and execution address the steps necessary to implement the analytic war game design. The main elements required to prepare for and execute concept evaluation effectively in wargaming are the war game environment, war game participation, concept training, and war game products.

4.1 War Game Environment. A critical element of war game design is the game environment. The environment is used to set the stage for war game execution. Basic environment products include the scenario, forces, and higher level guidance. For concept evaluation, the scenario should simply and accurately convey environmental factors and challenges that define the military problem portrayed in the concept. Adversary and friendly capabilities required to assess the concept must be depicted in an appropriate manner. The level of detail of these products is determined by the data requirements established in the analytic framework. It is important for these products to properly set the war game starting conditions with enough resolution for the participant blue and red cells to successfully accomplish their tasks in the allotted time. Preparing the environment products for war game execution is potentially costly and time-consuming and requires careful consideration in planning.

4.2 War Game Participation. Perhaps the most important element of any war game is the participants. In concept evaluation war games, the quality of the analysis is directly proportional to the quality of the participants. The set of participants should reflect the subject matter expertise required to address the particular focus of the concept, especially where new principles or capabilities are being considered. Concept evaluation requires participants with relevant joint operational experience and a mindset toward innovative approaches to military operations. Joint concepts require a broad set of expertise that may include representatives from the interagency and multinational communities.

4.3 Concept Training. War game participants need to be familiar with and understand the concept. Orienting the participants to the conceptual ideas in play is absolutely necessary to ensure meaningful data is generated. Concept familiarization is best implemented before participants arrive at the war game. Adding concept writing team members to the game cells facilitates understanding when concept-based questions arise.

4.4 War Game Products. The war game should be designed and structured to produce outputs that directly address the analytic framework through the data collection and analysis plan. War game products include but are not limited to: game materials produced by the cells, the observations collected during game play, survey data, and out-briefs. Careful consideration must be given to the time required to generate these products. The use of skilled facilitators and templates will help to focus cell deliberations on the important analytic issues. Typically, concept evaluation war games culminate with out-briefs to an executive audience from which valuable insights and recommendations are gained.

5. Analysis, Synthesis, and Reporting. Analysis of a war game involves breaking down the raw game data into analytic findings. Synthesis takes the analytic findings and translates them into meaningful recommendations about the concept's merits, risks and force development implications. The underlying method employs several sources of data to triangulate the viability of a draft concept's key elements.

During war game execution, analysts focus on participant deliberations as they employ a concept-based operational approach in a simulated future operational environment. Analysts' observations provide a qualitative understanding of why the game unfolded a certain way that complements more quantitative data streams focused on what happened during the war game. Each data stream contributes to the evidentiary basis for further examination. Following a war game, the raw observations gathered by various sources are transformed into evidence-based findings focused on the criteria established in the analytic framework. In this context, findings are conclusions reached after examination or investigation based on the corroboration of insights from multiple sources. Each finding in a report focuses on the elements of the evaluation criteria as well as risks and implications for future joint force development. Findings blend quantitative data and qualitative observations.

The evaluation process culminates with synthesis presented in the report as recommendations. Findings must be substantively significant to merit synthesis into a corresponding recommendation. The synthesis process uses critical thinking to organize findings in a way that clearly addresses the objectives of the evaluation. Ultimately, the evaluation report provides recommendations that enable the refinement of the draft concept and potentially improves the quality of future iterations of the concept.

6. Conclusion. As part of the joint concept development process, in-stride concept evaluation examines the viability of draft joint concepts prior to JSAP review. The concept evaluation process aims to design an evaluation that supports a detailed analytic framework based on clear outcome-oriented objectives. Analytic war games provide a useful means of achieving adequate rigor at acceptable cost. Preparation and execution of war games must ensure appropriate data is generated for analysis. Concept evaluation culminates with a report of findings and recommendations based on synthesis of the quantitative data and qualitative observations generated. The recommendations enable advancement of concept development through critical examination and refinement of the draft ideas.